for right-handedness and left-handedness in quite a different way. According to their belief, Anjea, the mythological fashioner of babies makes them all right-handed, but Thunder (who really existed before Anjea and made him) can also form infants and, whenever he makes any, they are all left-handed.

ALEXANDER F. CHAMBERLAIN.
CLARK UNIVERSITY,
November 6, 1903.

SOCIETIES AND ACADEMIES.

NEW YORK ACADEMY OF SCIENCES. SECTION OF GEOLOGY AND MINERALOGY.

THE regular meeting of the section was held on November 16 at the American Museum of Natural History. The first business was the election of officers for the year 1904, and Professor James F. Kemp was elected chairman, and Dr. Edmund Otis Hovey, secretary.

The first paper of the evening was by Doctor A. W. Grabau, of Columbia University, and was entitled 'Discussion of and Suggestions Regarding a New Classification of Rocks.' The speaker said in part that all classification ought, as far as possible, to be genetic or according to progressive development. Such a classification is practicable in the biologic sciences, but not in those which, like mineralogy, deal with inorganic substances. In developing his theme the speaker suggested the following provisional subdivisions: Endogenetic rocks, or those formed by chemical means, and exogenetic or clastic rocks, which are chiefly of mechanical origin. The first group was further subdivided into pyrogenic or igneous rocks; hydrogenic or aqueous rocks; biogenic or organic rocks. The hydrogenic and biogenic rocks were each again subdivided into rocks of calcareous, silicious, ferruginous, carbonaceous and miscellaneous composition; and a further subdivision was made into unaltered and altered or metamorphic types.

The exogenic or clastic rocks were divided into autoclastic, hydroclastic, pyroclastic, bioclastic and anemoclastic.

A further subdivision according to texture was into rudaceous or conglomeratic, arenaceous or sandy, and lutaceous or mud rock.

The next division was according to composition into two main groups, silicious and calcareous, and finally into unconsolidated and consolidated and metamorphic rocks.

In the discussion of the paper Professor Stevenson spoke of the value of such a classification through its giving to teachers ideas for presentation to their classes regarding the interrelations of rock. Professor Kemp spoke of the system as being well adapted to geologic study on account of its giving the surroundings in which any specified rock has developed, although it is not practicable to assign a place to every small rock group which is really of mineralogical rather than of geological value.

The second paper of the evening was by Wallace Goold Levison, 'Notes on Fluorescent Gems.' The author said, in abstract:

Fluorescence, or the property of reducing the wave-length of certain luminous rays, enhances the beauty of a few colored gems under conditions which lessen the effectiveness of others that do not possess this property. Garnet, for instance, which is non-fluorescent, loses its rich crimson color and becomes dull gray in pure blue light. On the contrary, most kinds of ruby and ruby spinel and pink topaz respond to light rays above the red on account of their fluorescence, and in blue-violet light still display their characteristic tints. The red color of the ruby is somewhat developed by the light of the air-gap spark and an uncovered Crookes tube. It is intensely excited by the cathode rays. Willemite displays a beautiful greenish-yellow color not only in ordinary light rich in the yellow-green rays, but also in light consisting chiefly or wholly of the more refrangible colors in which its characteristic color would be effaced but for the possession of fluorescence in high degree. This mineral is excited furthermore by some of the ultra-violet rays and by the Roentgen and Becquerel rays.

Other materials which owe desirable tints to fluorescence are pearl, opal, hyalite, chalcedony and kunzite (the new lilac spodumene). Hiddenite, the green spodumene, seems to be non-fluorescent. Impaired by fluorescence are

triphane, a yellowish-green spodumene, which exhibits pink fluorescence in blue light; emerald, which shows crimson fluorescence in the upper part of the spectrum, and diamond, with greenish-blue to blue fluorescence excited by several kinds of energy but more or less masked in ordinary light.

In fluorescent substances excitation produces a certain opalescence or milkiness which is sometimes of sufficient strength to be of importance. It can not be taken as an indication of impurities in the materials. In the white diamond such a phenomenon is a detrimental quality.

Fluorescence affords a simple and positive method of distinguishing some of the fluorescent gems from imitations. Glass is not fluorescent and hence is easily detected. Other compositions when fluorescent show different colors from the genuine stones. In doublets the cement appears as an opaque film and the components differ in behavior. Artificial pearls of high grade have not been examined, but probably they will behave like the genuine. Artificial, or 'regenerated,' ruby has been examined in a single specimen. It acts like the natural stone in blue light, while with the air-gap spark between iron or aluminum electrodes it has a brighter color than any of the several natural rubies which were examined.

The following gems were stated to be non-fluorescent: Garnet, amethyst, Spanish topaz, yellow Brazilian topaz, sapphire, ordinary beryl, possibly Siamese ruby.

In the discussion of Mr. Levison's paper Professor Kemp expressed the hope that there would be a practical outcome from such investigations which would enable those not experts to detect false or artificial gems; Mr. Kunz said that there were simpler ways than the use of fluorescence for the determination of gems, and Professor D. S. Martin emphasized the desirability of getting definite information as to the wave-lengths to which gems respond.

The third paper of the evening was 'Mineralogical Notes,' by Dr. George F. Kunz, in the course of which the author exhibited white compact garnet from Fresno County, California, associated with the newly described compact vesuvianite, or 'californite.' In connection with these two compact minerals attention was called to the third compact mineral 'pectolite,' which was described some years ago by W. P. Blake. Pyroelectric zinc blende associated with wollastonite from Mariposa County, California, also was exhibited.

Edmund Otis Hovey,
Secretary.

THE TORREY BOTANICAL CLUB.

The club met at the Botanical Garden on November 25.

Dr. Britton read a memorial on the life work of the late Mr. Cornelius Van Brunt. It was ordered spread on the minutes and printed in *Torreya* as part of the proceedings.

The principal paper on the scientific program was by Mrs. Britton, entitled 'Notes on Further Botanical Explorations in Cuba.' The party consisting of Dr. and Mrs. Britton and Mr. Percy Wilson went to Cuba by way of Tampa, Florida, going direct to Matanzas, which point was reached on August 27. Extracts were read from her diary giving an interesting account of the daily happenings during the exploration of the region about Matanzas, Cardenas and Sagua. Many photographs were shown illustrating the regions visited, and specimens of some of the more conspicuous plants were exhibited. As the herbarium material secured by the expedition has not yet been studied, no detailed account of the botanical features of the region was attempted. All of this part of the island has been devastated by war. There is no primitive forest, and comparatively few large trees are left standing. On the return a few days were spent in Havana, visiting the botanical institutions of that city.

Dr. Britton exhibited specimens of what seem to be two species of hackberry. The common *Celtis occidentalis* of the eastern states is a small tree seldom exceeding forty feet, having smooth, slightly acuminate leaves and globular orange-colored fruits. On an excursion of the Torrey Club to the Delaware Water Gap some years ago, some much larger trees were observed growing in moist locations and having long acuminate leaves and oval

fruits. This seems to be the *Celtis canina* of Rafinesque. It is somewhat widely distributed, its range overlapping to some extent that of *C. occidentalis,* but it always occurs on moister, richer lands and grows to be a much larger tree.

F. S. EARLE,
Secretary.

THE BIOLOGICAL SECTION OF THE ACADEMY OF SCIENCE AND ART OF PITTSBURGH, PA.

THE section held its first regular business meeting, Tuesday, November 3, in the lecture hall of the Carnegie Institute.

The section was organized on October 9 by a number of members of the academy, who are interested in biological science. The officers of the section are:

President—George H. Clapp.
Vice-President—Professor R. H. Ridgeley.
Secretary-Treasurer—Frederic S. Webster.

President Clapp introduced the speaker of the evening, Dr. A. E. Ortmann, curator of the department of invertebrate zoology of the Carnegie Museum, who addressed the section 'On the Progress of Zoogeographical Investigations during the Last Ten Years,' which was followed by a general discussion by members of the section.

Regular meetings of the section will be held on the first Tuesday evening of each month.

Professor J. B. Hatcher, Dr. A. E. Ortmann and Professor Edward Rynearson were appointed as members of the 'Publication Committee.'

FREDERIC S. WEBSTER,
Secretary-Treasurer.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY GEOLOGICAL JOURNAL CLUB.

THE club, which organized in October, 1903, has, during the past month, reviewed the following articles:

R. H. Allen, 'The Oil Fields of the Texas and Louisiana Coastal Plain' (by C. W. Hayes and William Kennedy, in Bull. 212 U. S. G. S.); S. Shapira, 'Copper Deposits of New Jersey' (by W. H. Weed, in Geol. Surv. N. J. An. Rep., 1902); F. S. Elliot, 'Topographic Features of the Yosemite Valley' (by J. C. Branner, in *Jour. Geol.,* September–October, 1903); E. Burton, 'Earth Movements in the Bay of Naples' (by R. T. Günther, in *Geog. Jour.,* September, 1903); H. W. Shimer, 'The Skull of the Imperial Mammoth' (*National Geog. Mag.,* October, 1903); Mr. Shimer also spoke of other fossil mammoths and of boring clams; W. G. Ball, 'Mining in the Kirghez Steppes' (*Eng. and Min. Jour.,* November 14, 1903); C. E. Danforth, 'Cretaceous Auriferous Conglomerate of the Cottonwood Mining District, California' (*Eng. and Min. Jour.,* October 31, 1903); R. W. Senger, 'Lithia Deposits' (by W. F. Shaler, in *Bull. Univ. Cal.,* Vol. III., No. 13); M. Rubel, 'Notes on the Michipoten Gold Belt' (*Eng. and Min. Jour.,* October 31, 1903); G. G. Wald, 'Some Natural Resources of Michigan' (An. Rep. Mich. Geol. Surv.).

The following papers were given:

Professor W. O. Crosby, 'The Deflection of the Merrimac River,' also 'A Description of the Formation at the Old Nickel Mine at Dracut, Mass.'; F. G. Clapp (U. S. G. S.), 'Methods of Geological Surveying in Western Pennsylvania'; G. F. Loughlin, 'The Formation at Mine La Motte.'

G. F. LOUGHLIN,
Secretary.

ASSOCIATION OF TEACHERS OF MATHEMATICS IN THE MIDDLE STATES AND MARYLAND.

ON Saturday, November 28, about 300 teachers met in the Milbank Memorial Hall, Teachers College, New York City, and organized an Association of Teachers of Mathematics in the Middle States and Maryland. Almost all the colleges and large schools within the territory named were represented, and considerably more than 200 persons enrolled as foundation members of the society, whose prime object is the improvement of mathematical teaching. Professor David Eugene Smith, of Teachers College, was elected president of the association; Professor H. B. Fine, of Princeton University, vice-president; and Dr. Arthur Schultze, of the High School of Commerce, New York City, secretary.

The meeting, which consisted of a morning and afternoon session, offered many points of interest to mathematical teachers. After President Butler of Columbia University had delivered the address of welcome, papers on various phases of mathematical teaching were read by Mr. Harry English, of Washington, D. C., Mr. Isaac N. Failor, of Richmond Hill, Mr. Arthur Schultze, of New York City, and Mr. J. L. Patterson, of Philadelphia.

A mathematical exhibition of models, calculating machines, teaching devices, rare mathematical books, portraits of famous mathematicians, etc., in the museum of Teachers College, greatly added to the interest of the occasion.

The next meeting of the association will be held at Columbia University, New York City, about Easter time, and applications for membership and other communications may be addressed to Arthur Schultze, secretary, No. 4 West 81st Street, New York City.

In addition to the officers, the following were elected as council of the association: Professor John S. French, Jacob Tome Institute, Port Deposit, Md.; A. M. Curtis, State Normal School, Oneonta, N. Y.; Harry English, Director of Mathematics, Washington high schools, Washington, D. C.; John R. Gardner, Irving School, New York City; W. Z. Morrison, Shadyside Academy, Pittsburgh, Pa.; Mary V. Shea, Commercial High School for Girls, Philadelphia, Pa.

SHORTER ARTICLES.

THE PELÉ OBELISK.

The most remarkable phase of the still continuing eruption of Monte Pelé is the appearance on the summit of the mountain of a column of solid rock which is a conspicuous feature even when seen from a distance of fifty or more miles. The nature of this 'obelisk,' the changes it has undergone, its rate of ascent, etc., have been faithfully reported by Professor A. Lecroix, Professor Angelo Heilprin, Major W. M. Hodder, Dr. E. O. Hovey and others,* but a more comprehensive statement than I believe has yet appeared in print, as to the place to be assigned it in the sequence of events normal to volcanoes, may be of interest to the general reader.

The earlier of the recent eruptions of Monte Pelé and all of those of La Soufrière of St. Vincent since early in May, 1902, as will be remembered, were explosive. Neither volcano has as yet discharged a stream of liquid lava. During the explosive eruptions referred to, vast quantities of angular rock-fragments were blown into the air, and fell on the adjacent land and sea. The material thus showered on Martinique and St. Vincent consists for the most part of fresh lava, but contains also large quantities of fragments of rock of older date, which were torn from the inner walls of the conduits through which the explosive discharges took place, and in addition on the sides of each volcano there are many 'bread-crust bombs' as they are termed, or masses of lava frequently two feet or more in diameter, that were blown out of the craters in a plastic condition and assumed rudely spherical forms during their aerial flights. A large portion of the fragmental material, but more especially that composed of fresh lava, is in the condition of fine dust-like particles.

The nature and explanation of the explosions referred to may be readily appreciated by picturing in fancy, as may be done from the evidence in hand, the sequence of events during the eruptions.

A volcano, it will be remembered, is a tube or *conduit* leading from the earth's surface sufficiently deep into its interior to reach a region of intense heat. In the case of the Antillean volcanoes under consideration, the conduits may be considered as rudely circular in cross section and approximating five or six hundred feet in diameter, and of great but unknown depth. Through the conduits rock material so hot that it was molten or rather as is more probable, because of the great pressure present, in a plastic and viscous condition, or a *magma,* as it is convenient to term it, was forced upward from a depth and reached or made a near approach to the bottoms of the craters from which the products of the explosions were blown out. The magma

* Science, November 13, 1903, Vol. XVII., pp. 633–634. *American Journal of Science,* October, 1903, Vol. XVI., pp. 269–281.